



September/October 2019

# Explorer



**BIRDS  
ARE  
AWESOME**



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Birds are awesome, and Sarah is here to show you why.

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Meet a few of Missouri's mighty oaks and the critters that crave their acorns.

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To avoid becoming food for predators, sculpins have a trick up their fins: They change color to blend in with their surroundings.

by Jim Rathert





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Mark Raithe  
Laura Scheuler  
Matt Seek  
David Stonner  
Nichole LeClair Terrill  
Stephanie Thurber  
Cliff White

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**ON THE COVER**

Painted Bunting  
by Noppadol Paothong



# GET OUT!

FUN THINGS TO DO  
AND GREAT PLACES  
TO DISCOVER NATURE

**BLUE JAYS  
COLLECT  
ACORNS AND  
HIDE THEM IN  
TREES.** Learn  
more on Page 14.



**TRI-COLORED  
BATS GATHER  
AT CAVES TO  
MATE AND  
HIBERNATE.**



Fall color season is a great  
time to **FLOAT AN  
OZARK STREAM OR  
BOOTHEEL SWAMP.**



**ELK BEGIN  
BUGLING AT  
PECK RANCH.**

Plan a trip with  
details from  
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# WHAT IS IT?

**DON'T KNOW?**  
Jump to Page 20 to find out.



- ❶ This is not the face you see ...
- ❷ ... when I am perched up in my tree.

- ❸ You won't see my owlsh eyes ...
- ❹ ... unless you crack my shell just right.



# Into the WILD northern creek

Rivers in northern Missouri are muddier than those found farther south. So tug on some rubber boots before exploring these mucky animal magnets.



Before starting a family, **belted kingfishers** find a steep riverbank near a good fishing hole. There, using nothing but their pointy beaks, they dig a long burrow in which to lay their eggs.



If you surprise a female **wood duck** while exploring a creek, listen for her shrill ooh-eeek, ooh-eeek, ooh-eeek call as she flies away.

## Take a Closer Look

**Green herons** often stalk along stream edges, hunting for fish. Watch a heron long enough and you might see an interesting behavior. The wily birds are known to use bait — insects, feathers, or twigs — to lure jittery fish into striking range.





## What Happened Here?

This is the front door to a beaver's den. The buck-toothed builders usually construct dens out of mounded up branches. But in northern rivers, they're just as likely to burrow into muddy stream banks to make a home.

## Listen

**Beavers** slap their tails against the water's surface — **SMACK!** — to warn family members that there's danger nearby.



*Western painted turtle*

## LOOK

Logjams offer the perfect place for turtles to crawl out of the cool water and soak up some sunshine. See if you can spot these sun-loving species.



## What Happened Here?

This is the entrance to a crayfish house. Crayfish tunnel down into soggy ground to stay cool and wet. As they dig, they roll mud into little round blobs. The *clawful* crustaceans stack the blobs at the surface to form muddy chimneys.

*Map turtle*

*Red-eared slider*

*Flathead catfish*

*Channel catfish*

*Black bullhead*

## Did You Know?

Every inch of a catfish's skin is covered with taste buds. This helps it find food in dark, murky water.

## Do More

Several kinds of catfish swim in Missouri's northern streams. Bait a hook with something stinky, and you're bound to catch one of these whiskered snacks.





Birds are awesome!

Hi, I'm Sarah. I study and protect Missouri's birds. And I love my job. Why? Because birds are awesome! They fly. They sing. They come in different colors, shapes, and sizes. So climb in for a fun flight. I'm going to show you why birds are the coolest creatures on the planet.

# Sarah's Guide to BIRDS

Buckle your seatbelt. We're about to go on a wild ride!

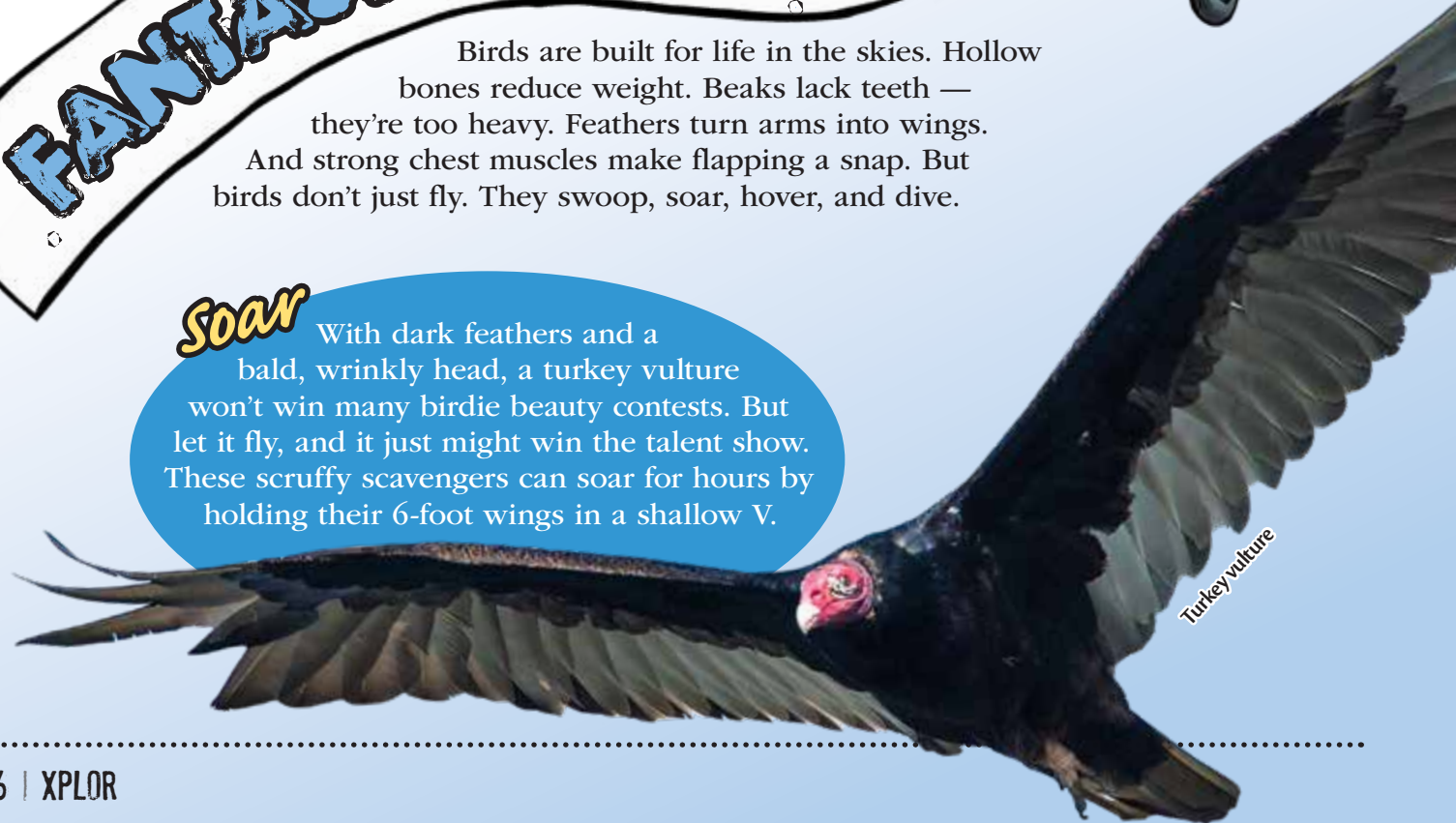


## FANTASTIC FLYERS

Birds are built for life in the skies. Hollow bones reduce weight. Beaks lack teeth — they're too heavy. Feathers turn arms into wings. And strong chest muscles make flapping a snap. But birds don't just fly. They swoop, soar, hover, and dive.

**Soar**

With dark feathers and a bald, wrinkly head, a turkey vulture won't win many birdie beauty contests. But let it fly, and it just might win the talent show. These scruffy scavengers can soar for hours by holding their 6-foot wings in a shallow V.

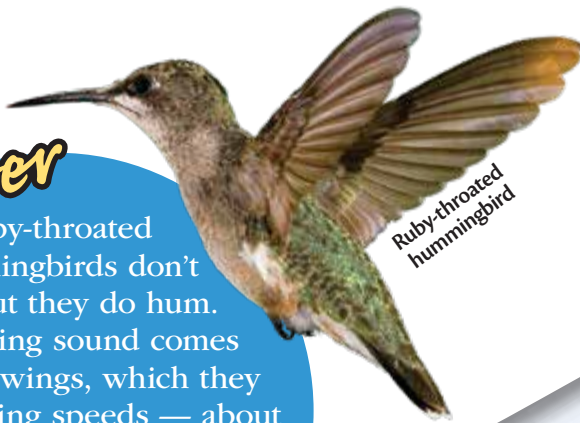


Turkey vulture



## Hover

Ruby-throated hummingbirds don't sing, but they do hum. The buzzing sound comes from their wings, which they flap at blinding speeds — about 50 times each second! This helps a hummer hover like a helicopter so it can sip nectar from flowers and bird feeders.



Ruby-throated hummingbird

## Dive

Hang on! We've got to gun it to catch this fast flyer. Peregrine falcons are the speediest birds in the world. When one spots a yummy pigeon, it folds its wings and ... WHOOSH! Like a missile, it plunges toward its prey at 200 mph.



Peregrine falcon

## MIGRATION SENSATION

A tiny transmitter helps me track where this warbler wanders. It's so small you can't see it, and the bird doesn't feel a thing.



Protecting migratory birds is a tricky business. They don't stay in one place for long. Take this **cerulean** (*sub-rue-lee-un*) **warbler** for example. During summer, it raises its babies in Missouri. But during fall, it flies to South America for winter. To thrive, warblers need healthy habitats here, there, and everywhere in between.





# BIRD BUFFET

More than 300 kinds of birds turn up in the Show-Me State. And each one is equipped with a variety of tools that help it survive. To see for yourself, sneak a peek at this lineup of beaks — and eyes, wings, tails, and feet.

## Beaks



**Red crossbills** pry open pine cones with the crisscrossed tips of their freaky beaks.



A **shoveler's** snout is like a pasta strainer. Water drains out, but seeds and insects get trapped inside for the duck to munch.



When a **pelican** wishes for fishes, it scoops them from the water with its pouchlike beak.

## Eyes



Thanks to eyes that stick out from the sides of its head, a **woodcock** can see up, down, and all around.



A see-through extra eyelid slides into place to protect a bird's peepers like a pair of goggles.



An **owl's** huge eyes gather lots of light and come in handy to snatch prey at night.

## Wings



Long, wide wings help this **red-tailed hawk** soar long distances with little effort.



A **bobwhite's** stubby wings help it change direction quickly. But they aren't good for flying far.



A **canvasback's** narrow, pointy wings let it zip through the sky at more than 60 mph.

## Tails



Male **wild turkeys** fan out their tails, then strut around to charm female turkeys.

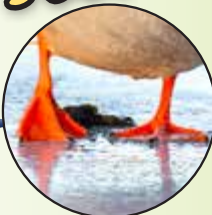


Stiff tail feathers keep a **woodpecker** from tipping over backwards while it hammers out holes.



A **scissor-tailed flycatcher** uses its forked tail to swoop and swerve like a feathered fighter jet.

## Feet



**Mallards** use their webbed feet to paddle swiftly through the water.



A **yellow-rumped warbler's** toes are tiny but tough. Could you hang on to a branch with your feet?



**Ospreys** can bend their outer toes forward or backward to get a better grip on slippery fish — pretty *talon*-ted, huh?

Ta-da! Have I mentioned that birds are awesome?





## TEENY-TINY TO BIG AND MIGHTY

Birds come in an astonishing array of sizes. Missouri's smallest bird is the ruby-throated hummingbird. It weighs less than a nickel and has a wingspan of about 4 inches. At the other end of the scale, American white pelicans win the prize for longest wingspan — up to 9½ feet. And trumpeter swans, the Show-Me State's heaviest bird, tip the scales at nearly 30 pounds.





# HOME TWEET HOME

From city parks to the far-flung Ozarks, almost anywhere you go you'll find a few beaked buddies to hang out with. Some birds live nearly everywhere. Others seek specific habitats in which to find food, make homes, and raise babies.



Dickcissel

## Grassland

With lots of seeds and bugs, grasslands offer a buffet for birds. An upland sandpiper weaves through the wildflowers, jabbing its beak at grasshoppers and other insects. Male greater prairie-chickens stamp their feet and shake their tail feathers to charm female chickens. A dickcissel sings his name to proclaim this patch of prairie belongs to him.



Wood duck



Red-winged blackbird



Greater prairie-chicken



Upland sandpiper

## Wetland

Wetland birds prefer life on the soggy side. Black-necked stilts wade through oozy mud and mucky water, snapping up aquatic creepy-crawlies. Wood ducks nest high in trees along marshes and streams. Male red-winged blackbirds sing from the tops of cattails to attract mates and warn other birds to KEEP OUT!



Black-necked stilt



When you're using binoculars, find the bird with your eyes first. Then — without taking your peepers off that bird — bring the binoculars to your eyes.



Eastern bluebird



Northern cardinal



## Forest

Deep in the shady forest, a barred owl uses its keen eyes and ears to detect rodents after dark. A pileated woodpecker bashes its beak into bark to nab tree-tunneling insects and hammer out homes. American redstarts flash their bright feathers to flush insects out of hiding. Scarlet tanagers creep through the canopy, bagging buzzy bees and wasps for breakfast. And a wood thrush's sweet, flutelike song rings through the trees.



Barred owl



American redstart



Pileated woodpecker



Scarlet tanager



Wood thrush

Now that you know why flocks rock, let's all say it together: Birds are awesome!

## LET'S GO BIRDING!

Missouri's wavy western prairies, rolling northern farmlands, rugged Ozark forests, and soggy Bootheel swamps offer plenty of places to see birds. But if you need help narrowing down your options, fly over to [greatmissouribirdingtrail.com](http://greatmissouribirdingtrail.com). There you'll find a handy map of the best birding locations in the state.



## Backyard

Backyard birds don't mind sharing space with people. Eastern bluebirds raise their babies in cavities, either in a tree or a birdhouse. Cardinals crack open seeds with their brawny beaks. A black-capped chickadee lets other birds know when danger lurks nearby by singing its name: *chicka-dee-dee-dee*.



Black-capped chickadee





# Nature Goes Nuts

Lots of critters depend on Missouri's mighty oaks and their many acorns.

by Bonnie Chasteen

*Gray squirrel*



When you're walking in the woods this fall, you're likely to kick up some acorns.

These capped containers of energy are the seeds of oak trees. In fact, one oak can drop 10,000 acorns in a growing year. Some take root and grow into mighty trees, but others become groceries — or homes — for wildlife. Let's look at six Missouri oaks and acorns and the critters that go nuts for them.

## Bur Oak

Also known as mossycup, the bur oak bears the only native Missouri acorn with a characteristic fringe. It's also the state's largest acorn, measuring  $\frac{3}{4}$ –2 inches long. Many kinds of animals (including humans!) eat the mossycup, but the little acorn weevil grub lives in it. Once the grub exits the acorn, it burrows into the ground to become a skinny-nosed brown beetle.



STEVEN KATOWICH, USDA FOREST SERVICE, BUGWOOD.ORG

SUSAN ELLIS, BUGWOOD.ORG



White-tailed deer

## Chinkapin

This acorn has a bowl-shaped cap that is thin and hairy, and the scales are small and flattened. Sweet chinkapin acorns serve as crucial winter food for wildlife, especially the white-tailed deer. One deer can eat as many as 300 acorns a day!



## Acorn ID

Size, color, shape, and texture are some of the things to note about the acorns you find. The cap, including the stem, is the part that covers the nutshell, and it's usually easy to snap off. The cap has its own features to study, especially the scales. In the bur oak's case, the scales along the edge of the cap produce a mossy fringe. If you can ID the acorn, you can ID the kind of oak it fell from.

Bur oak acorns



**Did you know?** Blue jays have expandable throat pouches that can hold up to five acorns at a time!



Blue jay



## Swamp White Oak

You might find these acorns in clusters of one to three. The cap covers about half the nut. It has flattened scales, and sometimes a short fringe on the border. Blue jays gather and bury only the best, weevil-free acorns they can find. Scientists give the birds credit for helping spread oak forests after the last ice age, about 11,000 years ago.

DAVID STEPHENS, BUGWOOD.ORG



**Did you know?** Squirrels may store and fail to dig up nearly 75 percent of the acorns they bury. Why? Lots of predators eat squirrels, so they may not live long enough to clean out their pantries.

## Pin Oak

The acorns of this member of the red oak family are small, striped, and round. The shallow cap covers about one-quarter of the nut. Although they're bitter, they last longer than white oak acorns. This may explain why squirrels will eat white oak acorns but store pin oak acorns.

Gray squirrel







Wild turkey

## Northern Red Oak

These acorns are barrel-shaped and hairy at the cap end. Many kinds of wildlife, including blue jays, woodpeckers, mice, squirrels, raccoons, deer, and especially turkeys depend on these long-lasting nuts for winter food. If you find a patch of bare ground with V-shaped marks, you know turkeys have been scratching for acorns.



## Southern Red Oak

This small, round, faintly striped acorn looks a little like a pin oak acorn, but the cap covers more of the nut. Raccoons are among the many kinds of wildlife that snarf down this bitter but nutritious acorn in the fall and winter.



Raccoon



## White Oaks and Red Oaks

Missouri's 19 kinds of oaks fall into two groups — white and red. White oaks include post, bur, swamp white, chinkapin, overcup, dwarf chestnut, and swamp chestnut oaks. Their leaves are rounded and lack bristles. Their acorns mature in one year, and they are sweeter than red oak acorns. Red oaks, also called black oaks, include the true black oak, the northern red, southern red, pin, shingle, willow, water, blackjack, cherrybark, Shumard, Nuttall's, and scarlet oaks. Red oak leaves have little bristles or spinelike tips at the ends. Red oak acorns take two years to mature and they are very bitter.



THE STRUGGLE TO SURVIVE ISN'T ALWAYS A FAIR FIGHT

THIS  
ISSUE:

# WOODCOCK VS EARTHWORM

Illustrated by  
David Besenger

## Super Slurper

Long and flexible, this beak is made for poking, pinching, and pulling.

## Braced for Escape

Barely visible bristles help the worm grip the ground and resist the bird's pull.

## Break-Away Body

The worm can lose its tail and still survive — and even regrow a new tail.

AND THE WINNER IS...

The American woodcock breaks the earthworm and swallows its head. Will the tail survive? Nope. It will just die. The woodcock wins.



# STRANGE but TRUE!

YOUR GUIDE TO ALL THE  
**UNUSUAL, UNIQUE,**  
AND **UNBELIEVABLE** STUFF  
THAT GOES ON IN NATURE



## FLYING SQUIRRELS

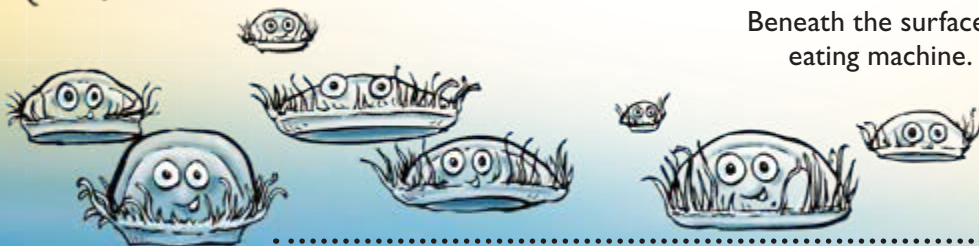
hide a colorful secret. Under ultraviolet light, the squirrely skydivers glow pink. Why do they gleam like radioactive cotton candy? Scientists aren't sure, but they think it may help the nocturnal nut bandits find each other in the dark.



The bright colors of **AUTUMN LEAVES** are there all year. You just can't see them. Green-colored chlorophyll (*klor-oh-fill*) covers up the other colors most of the time. In the fall, trees quit making chlorophyll. As the green fades, other colors shine through.

**OWLS** don't have teeth. So what's a hungry bird to do with a yummy mouse? Swallow it whole.

The mouse's meaty parts are quickly digested. Bones, teeth, and fur — which are too hard to digest — get barfed up later as a hairy gray pellet.



When a **GRAY SQUIRREL** thinks it's

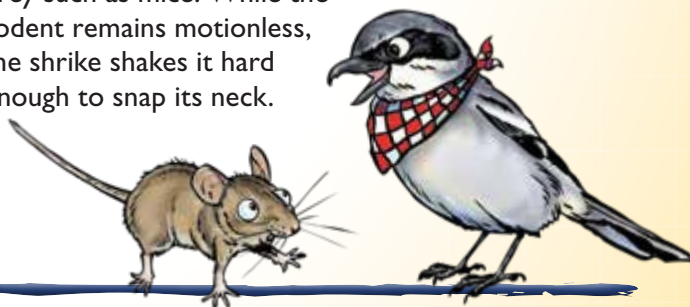
being watched, it pretends to bury an acorn while keeping the real deal tucked under its arm.

Biologists once believed this kind of trickery was used only by monkeys, apes, and humans. Now they know that's nuts.

Waste not, want not. If one of a **TARANTULA'S** legs gets injured, it usually eats the damaged appendage. But don't worry about the spider. While it regrows a new leg, the hairy hunter seems to crawl along just fine on the other seven.



It's a good thing **LOGGERHEAD SHRIKES** aren't much bigger than a bluebird. Meat-munching shrikes use pinpoint pecks to the neck to paralyze prey such as mice. While the rodent remains motionless, the shrike shakes it hard enough to snap its neck.



Beneath the surface of Missouri's lakes swims a mindless eating machine. **FRESHWATER JELLYFISH** squirt

around armed with stinging tentacles just like their saltwater cousins. But fear not. Missouri's jellies are too tiny to sting people.



# HOW TO

## Tell a Spooky Campfire Story

The s'mores are gone and the fire has burned down to coals. Night creeps in from the pitch-black woods. Now is the perfect time to send your buddies off to bed with the perfect spooky story. Here's how to spin a tale of terror that will raise goosebumps on their arms — in a good way.





## HERE'S HOW YOU TELL IT

### Ease Into It

Don't announce that you're about to tell a spooky story. Poke the campfire coals with a stick and send some embers into the sky. When all eyes have turned your way, begin talking quietly, as if you're remembering something. Something that you would rather not talk about. But something that your fellow campers simply must hear.

*I was camping beside this very creek about a year ago when something strange happened. I don't like to talk about it. But since we're here, I think you should know.*

### Set the Stage

Make sure your story takes place in the same location where you're camping. If a twig snaps or an owl hoots, mention how the people in your story heard the exact same thing. If lightning flickers, be sure to work a brewing storm into your tale. And if one of your buddies found a strange footprint near your campsite, the same print better find a way into your story.

*We were sitting around a campfire just like this when we heard something rustle in the woods. We didn't think much about it and went to bed. But the next morning we found half of our juice boxes empty. And here's the weird thing: They hadn't been opened. Each box had two holes in it, as if it had been stabbed with tiny straws — or fangs.*

### Act It Out

Channel your inner actor. Use facial expressions, hand gestures, and sound effects to act out the exciting parts. Whisper slowly to build suspense. Belt out words quickly when the action is rolling. Don't recite your story as if you're reading from a textbook.

*We saw it, standing on a stump, right over there. It looked like a normal chipmunk at first. But then it yawned, like it was tired from being up all night. And inside its cute little mouth, instead of buck teeth like a normal chipmunk, this one had fangs.*

*It scurried away when it saw us. We knew we had to save the woods from this vampire chipmunk. So we re-filled one of the empty juice boxes with kerosene from our stove. Then we sealed it up and left it on the picnic table.*

### Read Your Audience

If your buddies begin covering up yawns, they may be losing interest. Pick up the pace and add some more action. If they scoot closer to the campfire, maybe your story is getting too scary. Time to tone down the spooky parts.

*That night we hid in our tents with our flashlights ready. Just after sunset we heard: Pop! Hiss! Gulp, gulp, gulp. We flicked on our flashlights just in time to see the chipmunk drain the last drop of kerosene from the juice box. His beady eyes glowed blood-red.*

### Finish Big

Don't reveal the outcome of your story until the end. In fact, wait until the very last sentence if you can manage. When you're done, and everyone is still pondering your tale, turn toward your tent, pause dramatically, and say, "Sleep tight."

*Suddenly, the chipmunk jumped off the table and began racing around it. Round he went, maybe a dozen times. Then he just flopped over and lay very still.*

*Was he dead?*

*No. He'd just run out of gas.*



# XPLOR·MOOR

## Migration Mayhem



Some people call Missouri “flyover country.” But migrating birds think of it as “stopover country.” Millions of feathered flyers flap across the Show-Me State during their spring and fall migrations. Some birds stay for just a few days. Others spend summer or winter here. Either way, our state’s wetlands, prairies, and forests offer perfect pit stops for these tired and hungry travelers.

### When You Gotta Go, You Gotta Go!

Why do birds travel such long distances? To feed and breed. Birds move north in spring to take advantage of lots of food and nesting sites. When food grows scarce or they’re done raising babies, they head south. How do they know when it’s time to go? They get the itch to migrate from changes in temperature, day length, and food supplies.

### Instructions

Can you match the bird to the route that it takes during fall migration? Write the letter of each route above the number for each bird. If you get all of them right, it will answer this riddle:

### Why do birds fly south for the winter?

Because it’s too far



1

2

3

4

5

6



Broad-winged hawk



Prairie warbler

## WHAT IS IT?

— FROM PAGE 3 —

coarse black shell. It takes a hard whack with a hammer to open the nut. If you crack it just right, you might find what looks like an owl’s face surrounding the sweet nutmeat. Learn more at [mdc.mo.gov/field-guide](http://mdc.mo.gov/field-guide).









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## CRITTER CORNER Tri-Colored Bat



You may have seen this little bat fluttering around your neighborhood at dusk. It feeds on flying insects like moths, wasps, leafhoppers, and beetles. In the summer, it roosts in the trees, sometimes high up in the canopy. In fall, it gathers with others at cave entrances to mate. Then it seeks out the most humid and warmest part of the cave to hibernate in until spring. Babies are born in May. Learn more at [mdc.mo.gov/field-guide](http://mdc.mo.gov/field-guide).